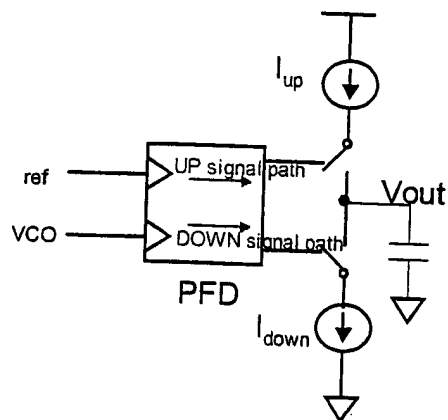


Fig. 1(a)
Related Art

Fig. 1(b)
Related Art



1. Mismatch in the current source : $I_{up} \neq I_{down}$
2. Mismatch in PFD : UP signal path \neq DOWN signal path

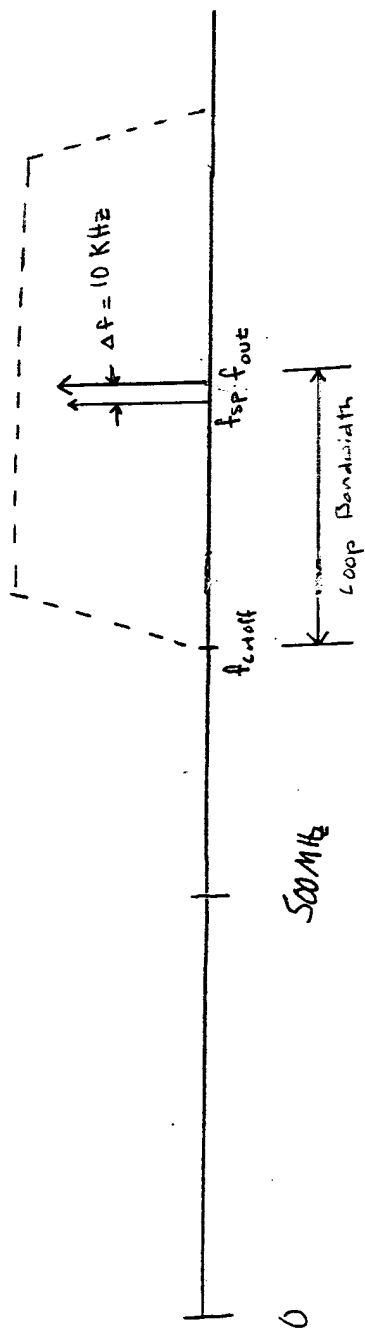


Fig. 2
Related Art

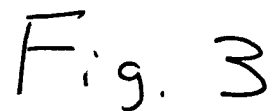


Fig. 4

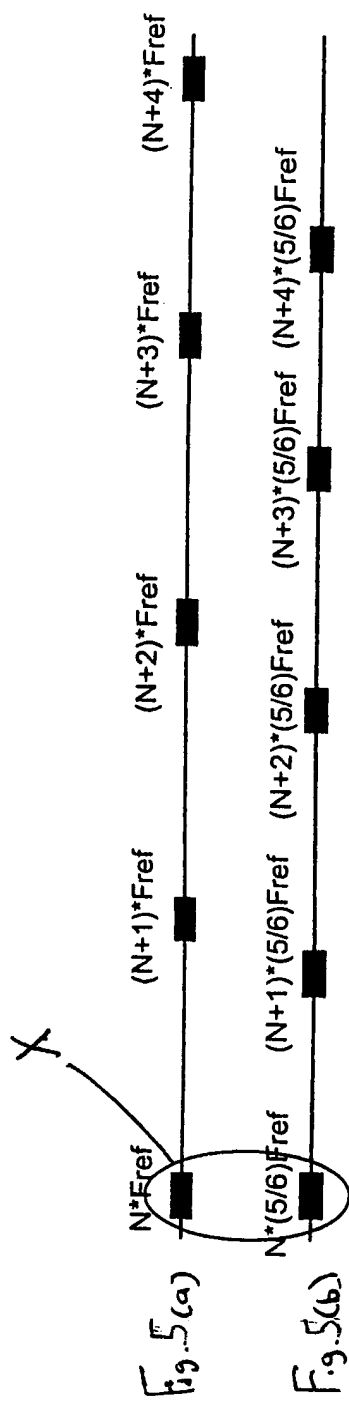


Fig. 6

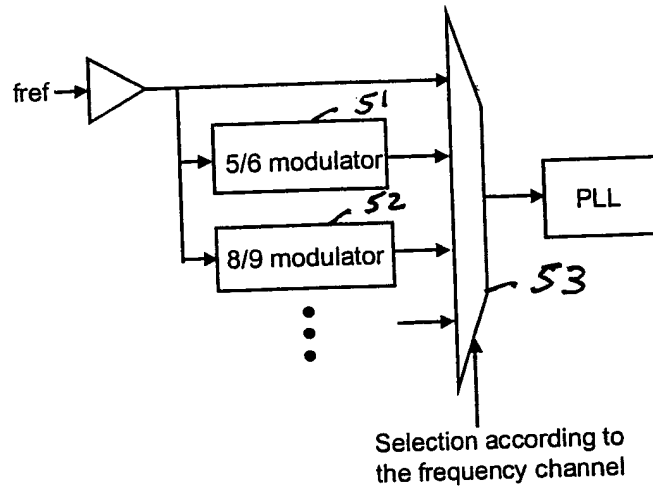
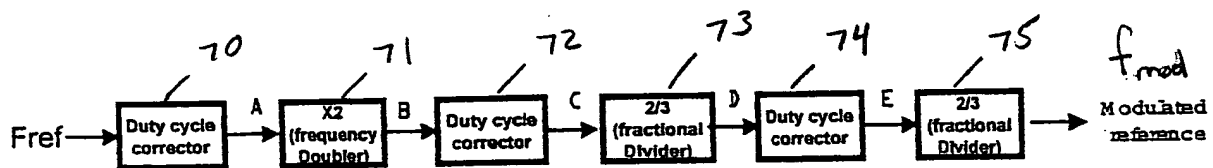


Fig. 7



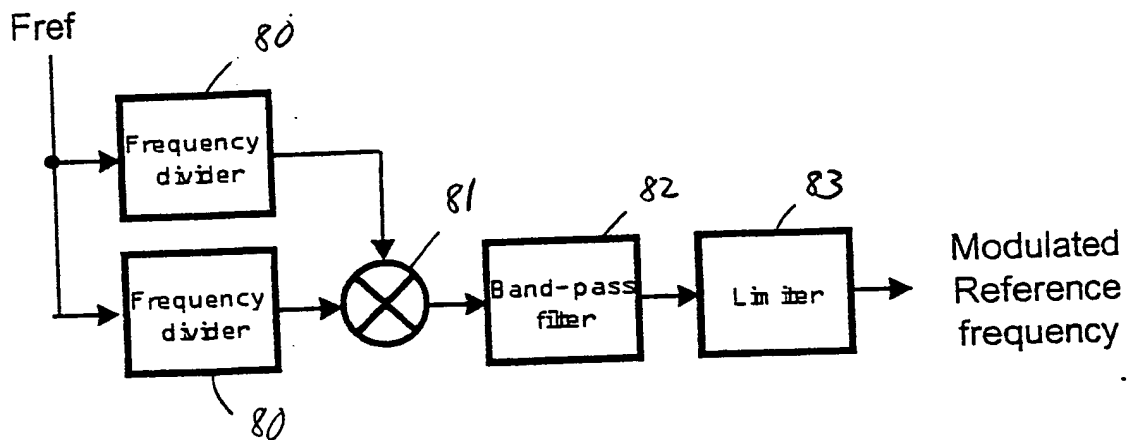
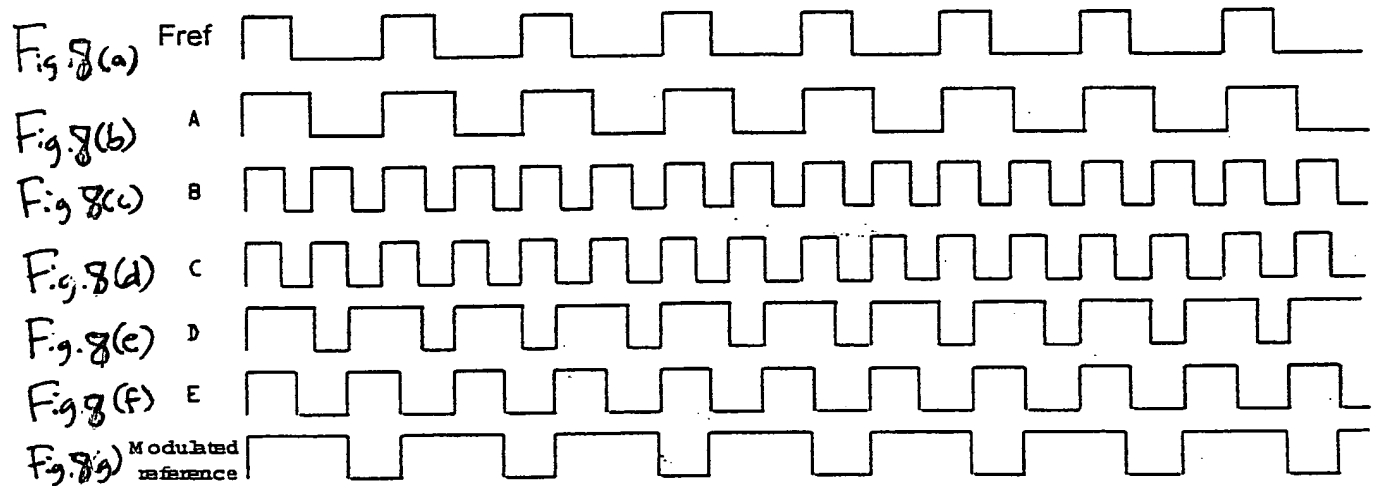


Fig. 9